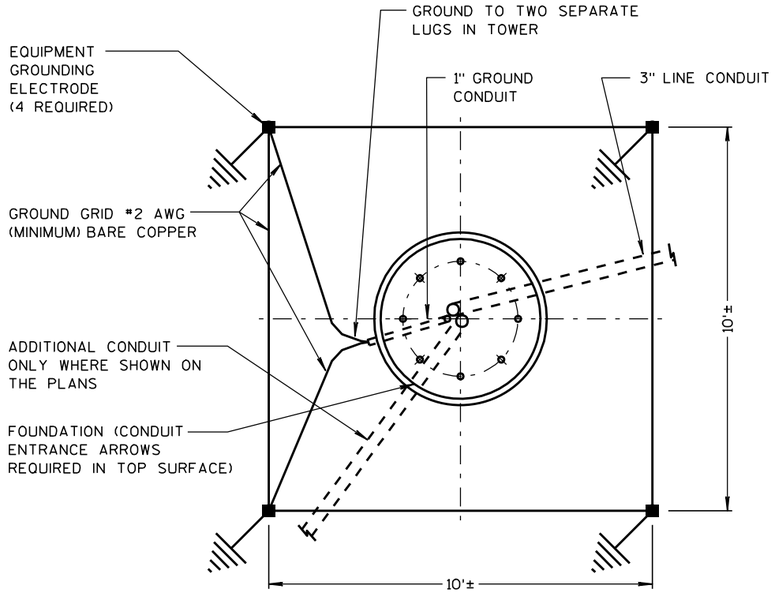
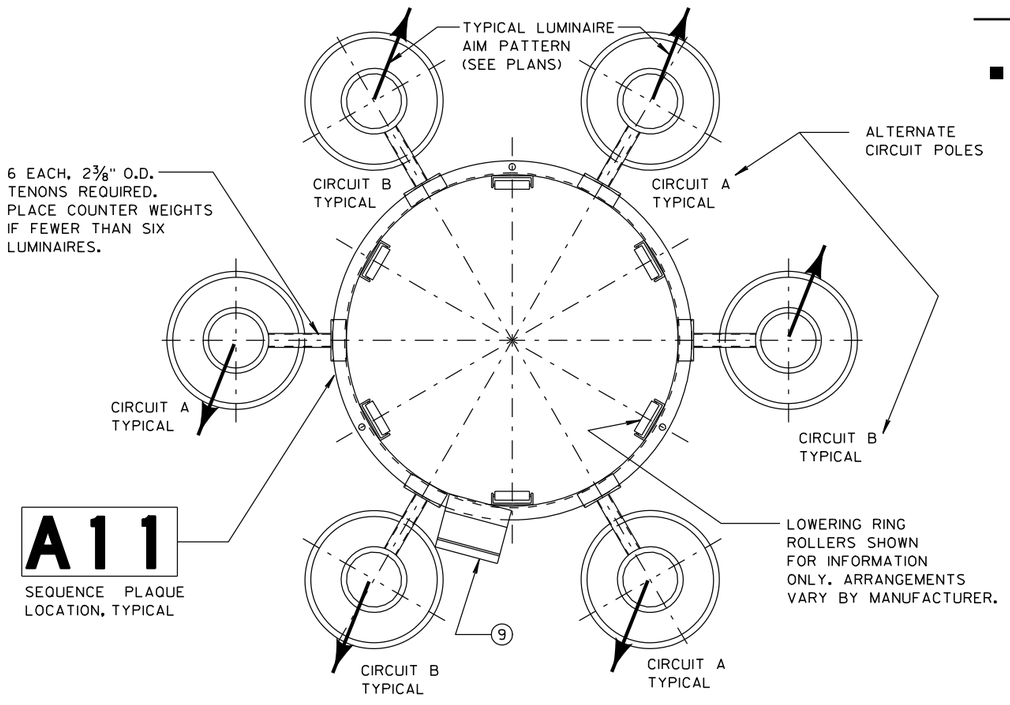
10A14 sheet a: Electrical Details High Mast Lighting



EQUIPMENT GROUNDING GRID AND FOUNDATION ELECTRICAL DETAILS



LOWERING RING OPTICS PLAN

1-φ CASE SHOWN; 3-φ CASE SIMILAR

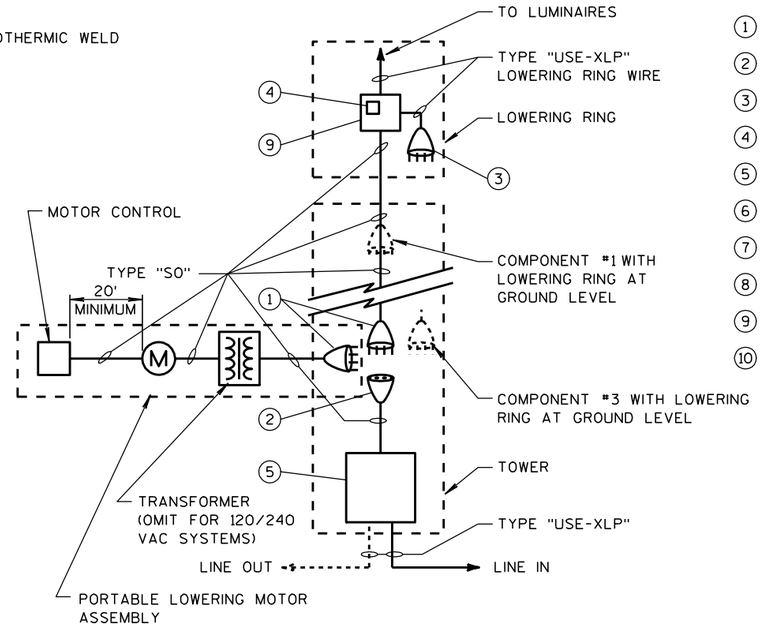
OVER CURRENT AND POWER CORD SCHEDULE

LINE VOLTAGE	HAND HOLE BREAKERS	INDIVIDUAL LUMINAIRE FUSES	POWER CORD	PRONGS ON LOAD BREAK DISCONNECT
1-φ 120/240VAC: 3 WIRE	2-30A, 1P, 277VAC	20A	10-3 + GND "SO"	A,B,N,GND
1-φ 240/480VAC: 3 WIRE	2-30A, 1P, 277VAC	10A	10-3 + GND "SO"	A,B,N,GND
3-φ 480Y/277VAC: 4 WIRE	3-30A, 1P, 277VAC	10A	10-4 + GND "SO"	X,Y,Z,N,GND
3-φ 208Y/120VAC: 4 WIRE	3-30A, 1P, 277VAC	20A	10-4 + GND "SO"	X,Y,Z,N,GND
1-φ 480VAC: 2 WIRE	1-20A, 2P, 600VAC	5A	10-3 + GND "SO"	A,B,N,GND

LEGEND

- HANDHOLE GROUND LUG
- CIRCUIT BREAKER 1P
- SURGE ARRESTOR
- FUSED LUMINAIRE
- EQUIPMENT GROUNDING ELECTRODE
- TERMINAL
- SPLICE
- CONDUCTOR
- EXOTHERMIC WELD

A,B,X,Y,Z	UNGROUNDED CIRCUIT CONDUCTORS
N	GROUNDED CIRCUIT CONDUCTORS
GND	EQUIPMENT GROUNDING CONDUCTOR
P	POLE (ELECTRICAL CIRCUIT)
φ	PHASE (ELECTRICAL CURRENT)
AIC	AMPERE INTERUPTING CAPACITY



ONE LINE DIAGRAM

ANY LINE VOLTAGE PER OVER CURRENT AND POWER CORD SCHEDULE

GENERAL NOTES

DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN IN THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

IN CASES WHERE THE PLANS SHOW LINE IN/LINE OUT DISTRIBUTION SYSTEMS, FURNISH FEED-THROUGH LUGS IN THE CIRCUIT BREAKER ENCLOSURE.

THE PLANS WILL SHOW WHICH CIRCUIT LEG(S) ARE CONNECTED TO EACH INSTALLATION.

FIELD RECODING OF UNGROUNDED CONDUCTORS IN TYPE "SO" CABLE MAY BE REQUIRED TO CONFORM TO SYSTEM COLOR CODING AS SHOWN IN THE PLANS.

CIRCUIT BREAKERS SHALL BE MINIMUM 14 kAIC AT THE VOLTAGE SHOWN.

LOADBREAK DISCONNECTS SHALL BE MELTRIC TYPE "DR", 30 AMP, 600 VOLT. DO NOT SUBSTITUTE. FURNISH "FDP" FINGER/PALM DRAW PLATES (APPLIES TO THE PLUG AND RECEPTACLE ONLY, NOT TO THE APPLIANCE INLET). FURNISH "LP" MOISTURE PROTECTION (APPLIES TO THE PLUG ONLY, NOT TO THE RECEPTACLE OR THE APPLIANCE INLET).

SURGE ARRESTORS SHALL BE 650 VAC, 2P OR 3P AS REQUIRED.

CIRCUIT BREAKER ENCLOSURES SHALL BE NEMA 1, 100 AMP, 600 VOLT, 2P OR 3P AS REQUIRED, SURFACE MOUNT. IN ALL SYSTEMS, FURNISH A MINIMUM 4-TERMINAL GROUND BUS. IN ISOLATED NEUTRAL SYSTEMS, ADDITIONALLY FURNISH A MINIMUM 1-TERMINAL NEUTRAL BUS. BUSSES SHALL BE RATED FOR NO. 10 AWG THROUGH NO. 2 AWG CU.

1. LOADBREAK DISCONNECT - MALE PLUG
2. LOADBREAK DISCONNECT - FEMALE RECEPTACLE
3. LOADBREAK DISCONNECT - MALE APPLIANCE INLET
4. SURGE ARRESTOR - 2P OR 3P AS REQUIRED
5. CIRCUIT BREAKER ENCLOSURE
6. CIRCUIT BREAKER
7. CIRCUIT BREAKER ENCLOSURE NEUTRAL BUS
8. CIRCUIT BREAKER ENCLOSURE EQUIPMENT GROUNDING BUS
9. LOWERING RING JUNCTION BOX (WEEP HOLE REQUIRED)
10. TERMINAL STRIP

ELECTRICAL DETAILS HIGH MAST LIGHTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 10 A 14-2a

6

S.D.D. 10 A 14-2a

References:

NONE

Bid items associated with this drawing:

ITEM NUMBER	DESCRIPTION	UNIT
659.0400	Luminaries High Mast Lighting	EACH
660.0200	High Mast Lighting Tower (location)	LS

Standardized Special Provisions associated with this drawing:

STSP NUMBER	TITLE
NONE	

Other SDDs associated with this drawing:

SDD 10a1 Electrical Handhole Wiring

Design Notes:

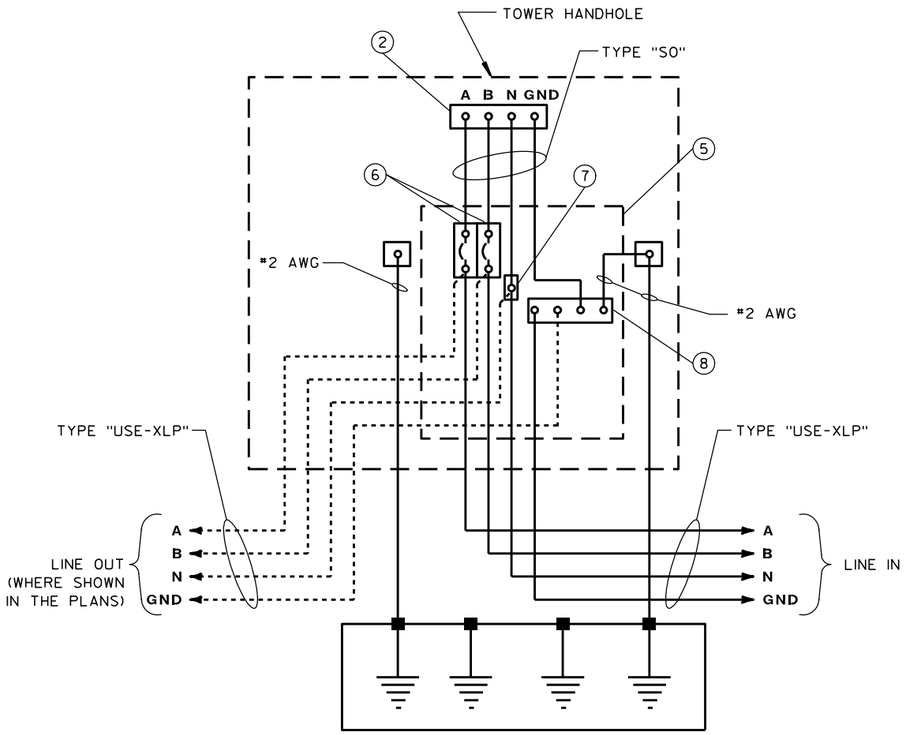
120/240 VAC systems support only 4 luminaries per tower, with no expansion capacity. Otherwise, use 240/480 VAC or 480Y/277 VAC. The Detail shows 6 required luminaire tenons, as 120/240 VAC systems can be converted to higher voltages with minimal changes to the tower wiring systems. Use this SDD in conjunction with the SDD for Electrical Handhole Wiring.

Highmast structure foundations will be designed site-by-site. Highmast shafts and lowering systems will be on the basis of design-build under Standard Spec 660. Only the electrical details shown in this SDD and described in Standard Spec 659 (high mast luminaries) and 660 are standard.

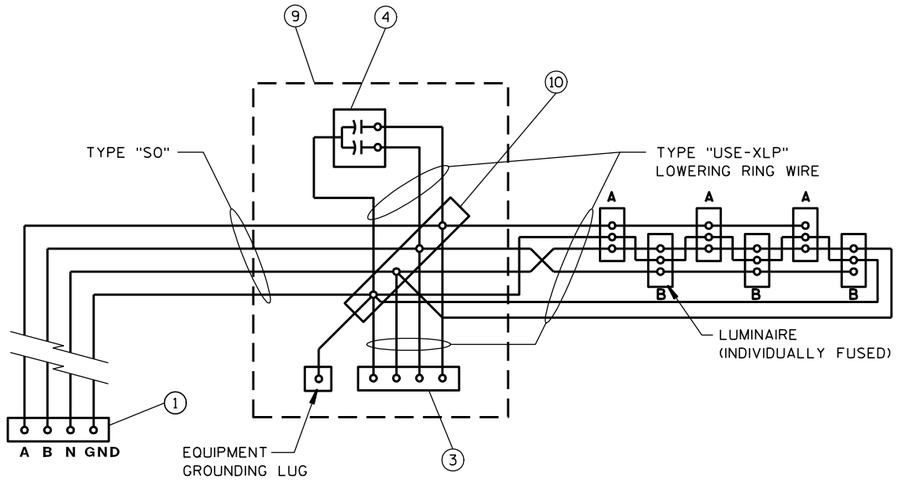
Contact Person:

Ahmet Demirbilek (414) 220-6801

10A14 sheet b: Electrical Details High Mast Lighting

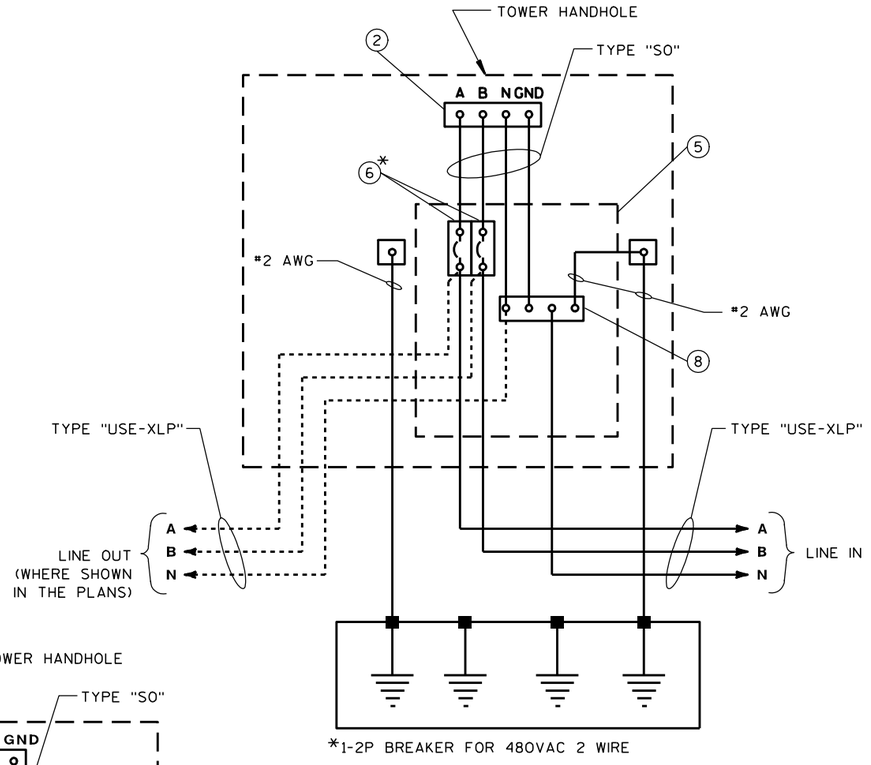


TYPICAL WIRING DIAGRAM-HANDHOLE
ISOLATED NEUTRAL SYSTEM
1-ϕ 120/240VAC OR 240/480VAC 3 WIRE



LOWERING RING JUNCTION BOX WIRING DIAGRAM

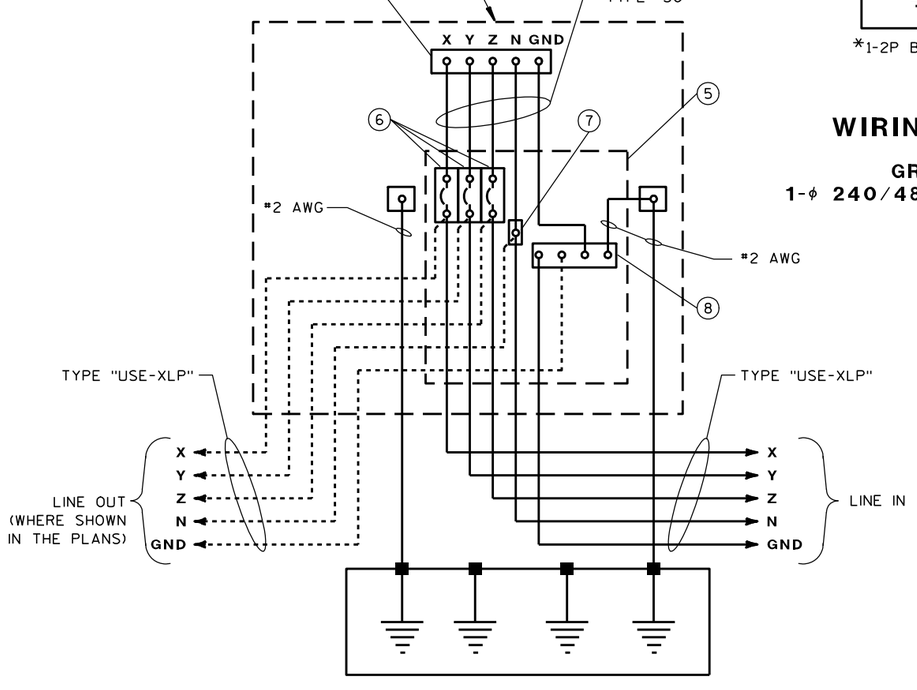
TYPICAL 1-ϕ CASE SHOWN; 3-ϕ CASE SIMILAR



*1-2P BREAKER FOR 480VAC 2 WIRE

TYPICAL
WIRING DIAGRAM-HANDHOLE

GROUNDED NEUTRAL SYSTEM
1-ϕ 240/480VAC 3 WIRE OR 480VAC 2 WIRE



TYPICAL WIRING DIAGRAM-HANDHOLE
ISOLATED NEUTRAL SYSTEM
3-ϕ 480Y/277VAC 4 WIRE
OR 3-ϕ 208Y/120VAC 4 WIRE

ELECTRICAL DETAILS
HIGH MAST LIGHTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/25/2010
DATE
/S/ John Corbin
STATE ELECTRICAL ENGINEER FOR HWYS
FHWA

6

S.D.D. 10 A 14-2b

6

S.D.D. 10 A 14-2b

References:

NONE

Bid items associated with this drawing:

ITEM NUMBER	DESCRIPTION	UNIT
NONE		

Standardized Special Provisions associated with this drawing:

STSP NUMBER	TITLE
NONE	

Other SDDs associated with this drawing:

SDD 10a14	Electrical Details High Mast Lighting sheet "a" must be used in conjunction with this drawing.

Design Notes:

See guidance for SDD 10a14 sheet "a".

Contact Person:

Ahmet Demirbilek (414) 220-6801